Olaf O. Storaasli

ORNL Distinguished Research Scientist
Future Technologies Group
Computer Science and Mathematics Division
http://www.ccs.ornl.gov/~olaf

PERSONAL DATA:

Born May 15, 1943 in Philadelphia, Pennsylvania and grew up in Saskatoon, Saskatchewan, Canada and Edinburgh, Scotland. Currently resides with his wife, Barbara in Oak Ridge Tennessee. They have five sons.

EDUCATION:

'64 B. A. (physics, mathematics and French), Concordia College (Moorhead MN)
'66 M. A. (mathematics; physics). University of South Dakota
'70 Ph. D. (engineering mechanics; mathematics), North Carolina State University
'84-'85 Visiting Scholar (computational mechanics) on NASA Fellowship at NTNU (Norsk Technical University) and Det Norske Veritas, Norway
'89 & '92 NTNU visiting scholar on Royal Norwegian Govt Research Funds

EXPERIENCE:

Internationally-known expert on parallel methods for structural mechanics on high-performance computers having conducted research in this area for over thirty years. Long before parallel computers were commercially available, Dr. Storaasli led a hardware, software and applications team at NASA Langley Research Center to develop one of the first parallel computers, the Finite Element Machine. He has authored over 80 works in computational structural mechanics including static and dynamic structural analysis, eigenvalue and optimization methods, interdisciplinary analysis, data management, and parallel-vector structural analysis methods on supercomputers. He received the prestigious Floyd L. Thompson Fellowship of NASA Langley Research Center for post-doctoral research at the Norwegian University of Science and Technology in Trondheim, Norway, and Det Norske Veritas, Oslo, Norway, during 1984-85. He has been invited to give numerous presentations in the U.S.and overseas. Beginning in 2000, he conceived and led a NASA Creativity and Innovation program to explore Field-Programmable Gate Arrays (FPGAs) as an alternative to CPUs for scientific and engineering computing. This led to the new NASA $15M 4-yr Reconfigurable Scalable Computer for Space Applications before joining ORNL.

PUBLICATIONS:

Editor of six books, over 90 technical papers and over 120 technical presentations (15 invited overseas lectures) on computational mechanics, high-performance computing algorithm and FPGA-related research.

SPECIAL HONORS:

NASA Floyd L. Thompson Fellowship 1984-85; Outstanding Performance Ratings; 8 Special Achievement Awards; Sustained Superior Performance Award;

Superior Accomplishment Awards. Received 5 NASA-wide and numerous Langley Achievement awards for outstanding work in Computational Structural Mechanics. These awards included significant contributions to the NASA Viking Mars Lander, Space Shuttle and Integrated Programs for Aerospace-Vehicle Design (IPAD) Projects as well as to the development of the Relational Information Management (RIM), since developed into the commercial relational data-base software: R:BASE and a NASA-U.S. Aerospace Industry Exhibit at the Paris Air Show. The citation on the IPAD Award states: *"For providing national leadership in engineering data-base management research vital to integration of computer-aided design and manufacturing to improve aerospace industry productivity".* In August, 1989, Cray Research (Silicon Graphics) selected the general-purpose matrix equation solution software, PVSolve , developed by Dr. Storaasli and his colleagues, to receive the first GigaFLOP Performance Award. for the Space Shuttle Solid Rocket Booster structural analysis. Dr Storaasli received The NASA Software of the Year Award for use of his GPS fast matrix solver to speed the GENOA design code. In a worldwide competition, Intel selected Dr. Storaasli to receive a pre-production Intel Pentium Pro (P6) computing system to evaluate performance of structural analysis software.

ORGANIZATIONS:

NASA Langley Supercomputer User's Systems Committee, OpenFPGA.org Steering Committee (founded 2005), MAPLD Technical Committee, Associate Fellow of the American Institute of Aeronautics and Astronautics (member of AIAA CAD/CAM Technical Committee 1981-85), Intel Supercomputer Users Group Executive Board, High-Performance Computing Advisory Board, Virginia Governor's School of Science and Technology Advisory Board & mentor, Caltech Admissions Representative, Pi Mu Epsilon, Alumni Distinguished Service Award (Presented by Waldorf College in 1988), nominated for Distinguished Alumni Award of Concordia College (1998).

CURRENT ASSIGNMENT:

Dr. Storaasli joined the Future Technologies Group in the Computer Science and Mathematics Division in 2005 as a Distinguished Research Scientist.to explore new algorithms and architectures that harness the power of FPGAs for future scientific supercomputing. This includes innovative methods for rapid solution of large systems of matrix equations on supercomputers and FPGAs. Prior to ORNL Dr. Storaasli served as a senior research scientist in the Computational Structures and Materials Branch at NASA's Langley Research Center. His research focused on developing new parallel computational algorithms to solve large systems of matrix equations, harnessing reconfigurable hypercomputers for large-scale analyses (Structures, Electromagnetics and Acoustics), fast eigenvalue analysis and FPGA-based HPC computations (image compression & robotic applications). Dr. Storaasli also taught Parallel Processing Graduate Courses in the Department of Physics, Computer Science and Engineering at Christopher Newport University in which his students use VIVA in addition to traditional MPI. He also taught graduate courses in Computer Science at George Washington University.